

Claims

[c1] What is claimed is:

1.A method of processing an image using a difference wavelet, the method comprising:
loading the image into an image processing program;
decomposing the image using the difference wavelet;
truncating the image below a predetermined threshold level or enhancing the image according to an enhancement function;
reconstructing the image using the difference wavelet;
and
outputting the image.

[c2] 2.The method of claim 1 wherein loading the image into an image processing program comprises the step of re-sizing an original dimension of the image.

[c3] 3.The method of claim 2 wherein resizing the original dimension of the image comprises resizing the image to have a new dimension of a $(2^k \cdot m \times 2^k \cdot n)$ matrix, wherein m and n are positive integers and k represents a level of decomposition and reconstruction.

[c4] 4.The method of claim 3 wherein decomposing the im-

age using the difference wavelet comprises performing a decomposition process of each row of the image, performing a matrix transpose operation on the image, and performing another decomposition process of each row of the image.

- [c5] 5.The method of claim 3 wherein reconstructing the image using the difference wavelet comprises performing a reconstruction process of each row of the image, performing a matrix transpose operation on the image, and performing another reconstruction process of each row of the image.
- [c6] 6.The method of claim 3 wherein outputting the image comprises resizing the image back to its original dimension.
- [c7] 7.The method of claim 1 wherein after decomposing the image using the difference wavelet the method further comprises performing an RGB (red-green-blue) to YUV (luminance-bandwidth-chrominance) transformation.
- [c8] 8.The method of claim 7 wherein after reconstructing the image using the difference wavelet the method further comprises performing a YUV to RGB transformation.
- [c9] 9.The method of claim 1 wherein the truncation process is performed line by line on the image.

- [c10] 10.The method of claim 1 wherein the difference wavelet used for decomposition and reconstruction has a filter bank corresponding to average values and a filter bank corresponding to fluctuation values.
- [c11] 11.The method of claim 10 wherein parameters of the difference wavelet used for decomposition and reconstruction are $(r, r_t) = (1, 3)$, where r represents an average parameter and r_t represents a fluctuation parameter.
- [c12] 12.The method of claim 1 wherein the reconstruction process is performed by using periodic boundary conditions.
- [c13] 13.The method of claim 1 wherein both truncating the image below the predetermined threshold level and enhancing the image according to the enhancement function are performed after decomposing the image using the difference wavelet.